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WR MT  
Mail Stop 60190

APR 26 1989

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Memorandum

To: ARD, Refuges and Wildlife (60130)  
Attention: Barney Schranck

From: Regional Engineer, Region 6

Subject: 1988-1989 Annual Water Use Report/Management Plan

The subject report for Medicine Lake National Wildlife Refuge has been reviewed and approved as submitted. When checking our files, however, we did not find copies of the 1986 and 1987 Annual Water Use Reports/Management Plans. Please ask the Refuge to send us a copy of each. If reports were not prepared, we would appreciate a short narrative detailing water use from each source for these years.

Extend our thanks to Refuge personnel for the timely submission of this report.

/s/ WILLIAM A. CONDY

bcc: EN Rdg File  
Circ File  
RD  
EN:LCoe:4-24-89

MEDICINE LAKE NATIONAL WILDLIFE REFUGE

MEDICINE LAKE, MONTANA

ANNUAL WATER MANAGEMENT PLAN

1988 WATER USE DATA

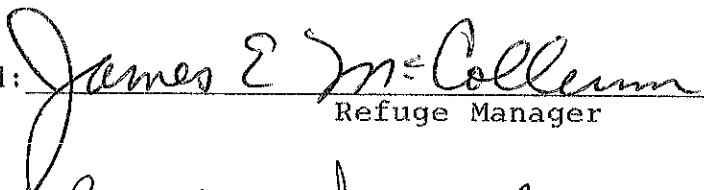
1989 RECOMMENDATIONS

UNITED STATES DEPARTMENT OF INTERIOR

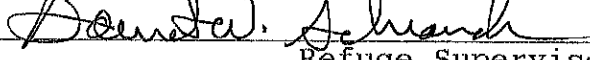
FISH AND WILDLIFE SERVICE

Authored:   
Assistant Refuge Manager

Date: 1/1/89

Submitted:   
Refuge Manager

Date: 3/23/89

Reviewed:   
Refuge Supervisor

Date: 3/28/89

Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

## WATER USE DATA - 1988

### Water Rights

Under the Montana Water Rights Adjudication Law, all water rights filed prior to 1973 had to be refiled before 15 April 1982. The refuge water rights were researched and filed by the Regional Office engineering water resource section. A filing of 30 different applications for a total of 146,715 acre feet of water was made prior to the deadline.

### Source of Supply

The Big Muddy River ran for 12 days in July accounting for 121 acre feet of the 122 acre feet of runoff Medicine Lake received in 1988. Lake Creek trickled for most of May and the first part of June, but amounted to only five (5) acre feet of runoff. ✓ None of the other tributaries had any water movement.

None of the management pools reached recommended management levels (Table 1).

Table 1. Recommended and actual water levels, Medicine Lake NWR, 1988.

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<u>Pool</u>	<u>01/01/88</u>	<u>Recommended Level</u>	<u>12/31/88</u>
Homestead	1935.20	1937.65	Water below gauge
Gaffney	1942.54	1945.00	Water below gauge
#10	1944.68	1945.80	Water below gauge
Deep Lake	1944.00	1945.80	Water below gauge
Long Lake	1942.54	1945.00	Pool dry
#11	1950.90	1953.00	Pool dry
#12	1952.48	1956.00	Water below gauge
Katy's	1951.50	1954.40	Water below gauge
Medicine Lake	1941.66	1943.02	Water below gauge
Sayer Bay	1944.04	1946.00	Dry except channel

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Long Lake, Pool #11, and Sayer Bay were dry by late summer. Gauges on the remaining pools were high and dry since September.

The lack of runoff into the refuge is reflected in increasing salinity and conductivity readings (Table 2).

Table 2. Comparison of fall water chemistry readings, Medicine Lake NWR, 1985-88.

Impound- ment	Loca- tion	Salinity Parts/1000				Conductivity Micromhos/cm			
		85	86	87	88	85	86	87	88
Med. Lake	1A	1.5	1.3	1.8	2.8	1600	1500	1850	2700
Med. Lake	1B	1.2	1.0	1.7	2.7	1200	1150	1810	2680
Gaf. Lake	2A	2.0	1.5	3.0	3.0	1800	1600	2200	3000
Gaf. Lake	2B	2.0	1.3	2.2	4.5	1800	1900	2490	3530
#10 Lake	3	2.2	1.9	0.8	*	2300	2010	510	*
Deep Lake	4	0.2	1.5	2.5	4.1	500	2400	2800	4100
#12 Lake	5	3.2	2.0	2.0	*	3100	2050	2120	*
Katy's	6	10.0	9.0	11.0	30.9	9500	8300	10300	25000
#11 Lake	7	4.5	2.1	4.9	*	4200	2250	4510	*
Homestead	8A	3.5	1.5	1.8	3.9	3100	1420	1850	3650
Homestead	8B	6.5	1.2	1.3	*	6000	1280	1390	*
Sayer Bay	9	2.5	1.5	*	*	2500	1720	120	*

\*no sample taken

Even with drought conditions, we did some manipulation of water. In mid-June we started to release water from Homestead into the Big Muddy. This was to remove water from emergent vegetation to reduce botulism die-off of waterfowl. From 17-24 June approximately 1000 acre feet were released.

Also in June an undocumented amount of water was released from Pool #10 into Gaffney Lake. The movement of water was for botulism control in Pool #10.

#### IMPROVEMENTS TO WATER FACILITIES: 1986-1988

During 1987, the 9F on Long Lake was replaced with a four-bay, stoplog structure.

A second, 48 inch culvert with riser was added between Pool #10 and Gaffney Lake in 1986.

Regional Water Resource people corrected water elevations the refuge had been using. They identified discrepancies for Medicine Lake, Homestead, Gaffney Lake, and Pools #10, 11, and 12. These corrected elevations will go into effect during 1989.

## WATER MANAGEMENT FOR 1989

### Homestead Lake

A Ducks Unlimited project is planned this year. Two dikes will be constructed, one with a 36-inch culvert and riser, separating Knutsen Bay from Homestead Lake. A new outlet structure in the southwest corner of Knutsen Bay will release water into the Big Muddy Creek (Fig. 1). Sheep Creek Pool and Breaser Pond will be kept as high as possible without eroding the nesting islands.

To reduce the severity of avian botulism, water from Homestead Lake will be released starting in mid-June. This drawdown will continue in order to dry the Knutsen Bay area of the Homestead Unit. Hopefully all the paper hurdles will be completed and DU can start construction during late summer or early fall.

### Katy's and Deep Lakes

Neither of these sump areas have received any diverted water since 1982. If enough runoff occurs, each of these lakes should receive as much water as needed to bring them up to management levels. Katy's Lake receives diverted water from Pool #12 and Deep Lake receives water from Pool #10 and Gaffney Lake.

### Pool #11

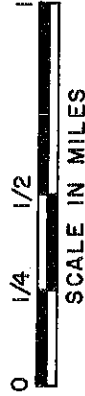
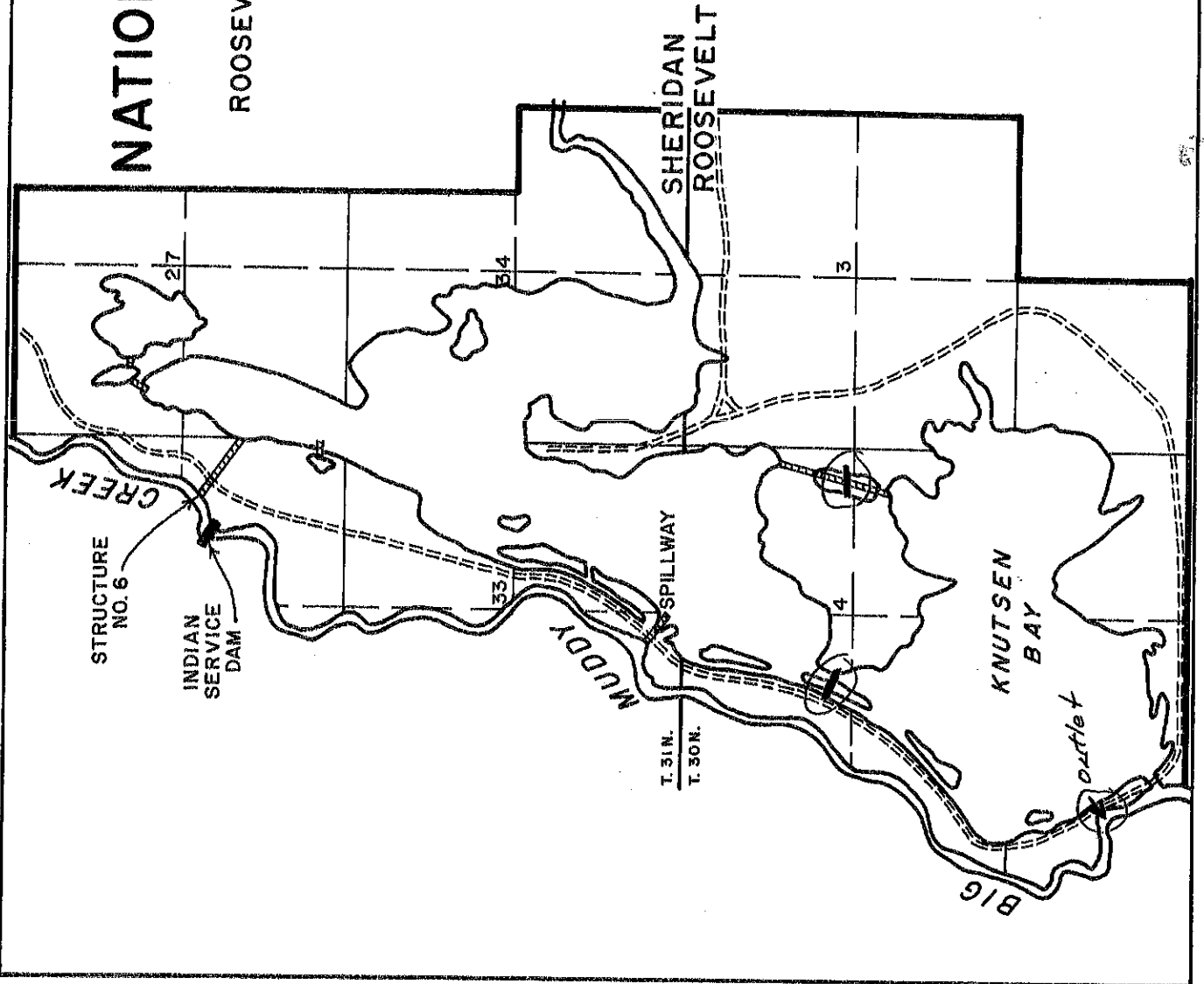
Any surplus water from Pool #12 not needed for Katy's Lake should be used in this pool to keep the 30 nesting islands predator free and productive. Pool #12 will be sacrificed to keep Pool #11 at management level.

### Remaining Pools

The remaining pools will be filled to management levels if water is available (Table 3). The 1988 column is uncorrected elevations and the 1989 column is the correct elevations. These corrections reflect changes in gauge placement rather than changes in actual water levels. Hopefully we will be able to change the gauges in 1989.

Figure 1.

# MEDICINE LAKE NATIONAL WILDLIFE REFUGE HOMESTEAD UNIT ROOSEVELT AND SHERIDAN COUNTIES, MONTANA



CODE	

Table 3. Recommended water levels, Medicine Lake NWR, 1989.

Management Pool	1988 Level	1989 Level
Homestead (1)	1937.65	1930.40 until mid-June
Gaffney	1945.02	1937.00
#10	1945.80	1938.66
Deep Lake	1945.80	1938.66
Long Lake	1945.00	1938.00
#11	1953.00	1945.54
#12	1956.00	1948.50
Katy's	1954.40	1946.90
Medicine Lake	1943.02	1935.86
Sayer Bay	1946.0	1938.84

(1) Drawdown stage for construction after 1 July.

WATER MANAGEMENT PLAN/  
USE REPORT  
SHORT FORMNE MONTANA WMD  
JOHNSON LAKE WPA (ROOSEVELT CO.)

3/23/89

Station Name

Date of Inspection

NOT RECEIVED

UNNAMED COULEE

Water Right No.

Source(s)

Water Diverted: Yes \_\_\_ No X

Means of Diversion DAM

Rate NATURAL FLOW OF 200 CFS UP ✓  
TO 1050 ACRE FEET

\*Impoundment(s): Yes \_\_\_ No \_\_\_

Water Level DRY

(Elevation or Est. Storage Amount)

\*Well(s):

Free Flowing \_\_\_\_\_ gpm

Pumped \_\_\_\_\_ gpm

Type of Use:

Surface Irrigation \_\_\_\_\_

(Crop) \_\_\_\_\_

Fish & Wildlife X \_\_\_\_\_

Stock \_\_\_\_\_

Domestic \_\_\_\_\_

Other \_\_\_\_\_

Overall Climactic Conditions:

Six consecutive years of drought, no run-off during these years.

Condition of Facilities: Good

Proposed Water Program:

Fill impoundment to capacity and flush if surplus water is available.

Comments:

\*If more than one impoundment or well, please attach additional  
sheet



WATER MANAGEMENT PLAN/  
USE REPORT  
SHORT FORM

CARLSON WPA (SHERIDAN COUNTY)

Station Name

3/23/89

Date of Inspection

NOT RECEIVED

Water Right No.

UNNAMED COULEE

Source(s)

Water Diverted: Yes      No X

Means of Diversion DAM  
Rate NATURAL FLOW UP TO 40 ACRE  
FEET

\*Impoundment(s): Yes      No     

Water Level DRY  
(Elevation or Est. Storage Amount)

\*Well(s):

Free Flowing                  gpm

Pumped                  gpm

Type of Use:

Surface Irrigation                 

(Crop)                 

Fish & Wildlife X

Stock                 

Domestic                 

Other                 

Overall Climactic Conditions:

Six consecutive years of drought, no run-off during these years.

Condition of Facilities: Dam is state highway roadbed which is in excellent condition.

Proposed Water Program:

No control, level dependent upon culvert in highway.

Comments: